Nabil Fayoumi
11/13/2003 07:28 AM

To: sdsmit cc: Sandra.Bron, pbarrett
Subject: FW: U.S. EPA's ERA Comments for Sauget Area 2

Steve,

Attached are the U.S. EPA's comments for the Ecological Risk Assessment for Sauget Area 2 Site, Sauget, Illinois, dated August 31, 2003. Please submit your responses to the attached comments within 21 days of receipt of this e-mail. If you have any questions, please contact me at 312-886-6840.

Sincerely,

.....
Nabil Fayoumi
Remedial Project Manager
Superfund Division
U. S. EPA - Region 5
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E-mail: fayoumi.nabil@epa.gov
----- Forwarded by Nabil Fayoumi/R5/USEPA/US on 11/12/2003 10:10 AM -----

Peter.Barrett@ch2m.com
11/07/2003 02:40 PM

To: Nabil Fayoumi
Subject: FW: Sauget

Nabil - here are the Ecological Risk Assesment review comments.

Regards - Peter

-----Original Message-----
From: Loveridge, Ryan/BOS
Sent: November 07, 2003 1:41 PM
To: Barrett, Peter/STL
Subject: RE: Sauget

Peter,

Attached are the latest comments that were revised a little after the STL meeting.

Thanks,

Ryan

-----Original Message-----
From: Barrett, Peter/STL
Sent: Thursday, November 06, 2003 4:11 PM
To: Loveridge, Ryan/BOS
Subject: Sauget

Ryan - could you please re-send your review comments on the Sauget Eco-risk assessment? Did we revise them after the STL meeting you attendeed??

Regards - Peter Comments on BERA.dc

Review of Baseline Ecological Risk Assessment, Sauget Area 2 Sites, Sauget, IL

PREPARED FOR: Peter Barrett /STL
Ning Li /STL

PREPARED BY: Steve Petron/BOS
Ryan Loveridge/BOS

DATE: October 16, 2003

A review of the Baseline Ecological Risk Assessment (BERA) for the Sauget Area 2 Sites, Sauget, IL, was performed by CH2M HILL. This review included a quality check of five percent of the calculations in the BERA, and an evaluation of all assumptions and conclusions. In general, the technical/quantitative portion of the BERA was well done. Very few errors were found, and most were likely related to rounding errors. Correction of these errors would have little impact on the risk conclusions. CH2M HILL is also in general agreement with the conclusions of the BERA. However, descriptions of the site, potential remedial actions (in particular, the interim groundwater remedy), and the rationale for sample locations should be expanded in the BERA. Presumably, this information is presented in other documents and will receive further attention in the Feasibility Study, but should be included here for the reader.

Section 2. Problem Formulation

Section 2.1. Suggest adding a site history and a description of the current and future land uses. Although this information may be presented in previous documents, the hazard identification and problem formulation for the purposes of the BERA are inadequate in this regard. This information would include a chronology of land use, summaries of preceding investigations and findings, site activities, and proposed future activity. This information is important because it allows the reader to determine if COCs were appropriately selected, locations were adequately sampled, and if the risk conclusions adequately protect for future use by ecological receptors. For example, the current lack of connectivity in the site limits the number of foxes exposed on-site. It is unclear if connectivity will increase, thereby becoming more attractive habitat for foxes, and increasing exposure.

Section 2.3.1. Similar comment as above. A hydrological description of the site is needed prior to this Section because aquatic pathways that have not been clearly established.

Section 2.4. Note that amphibians would be suitable Receptors of Interest for Site Q (Ponds) because, during non-Mississippi flood years, they may be a significant dietary component of higher trophic levels and would be the dominant organisms in the water column.

Section 2.5. Suggest that soil invertebrate toxicity benchmarks be compared to soil concentrations as a Measurement Endpoint in the Assessment Endpoint for vermivorous wildlife. Note that benthic invertebrates were evaluated for the fish community Assessment

Endpoint and the plant community was evaluated for herbivorous receptors Assessment Endpoint.

Figure 2.12. Sediment direct contact with benthic community should be changed from an incomplete to a complete exposure pathway (dark circle).

Figure 2.13. Direct contact with soil for Benthics should be changed from an incomplete to a complete exposure pathway (dark circle). Presumably, it would be the same as for sediments.

Figure 2.14. Soil ingestion for the Red Fox should be changed from an incomplete to a complete exposure pathway (dark circle).

Figure 2.14. Direct contact with soils for Plants should be changed from an incomplete to a complete exposure pathway (dark circle).

Figure 2.14. Volatilization from soil and inhalation as a potential pathway should be included.

General note: Suggest presenting figures that show the exposure pathways and trophic levels transfers for the Aquatic, Ponds, and Floodplain (terrestrial) areas in Section 2.

Section 3. Aquatic Ecological Risk Assessment

Section 3.1. Suggest including a discussion why observations of the fish community and feeding habits of fish collected from the Mississippi River and on-site ponds was not performed as stated in the Work Plan (8th bullet for 1. Aquatic Systems).

Section 3.2. Suggest including a discussion on a 'hotspot' evaluation for analytes removed from analyses because the frequency of detection was below 5%.

Table 3-7. Please investigate why the average concentrations of some SVOCs are higher than the maximum concentrations or add an explanatory footnote.

Remove 8th bullet for 1. Aquatic Systems: Observations of the fish community and feeding habits of fish collected from the Mississippi River and on-site ponds.

General note: The fresh weight-dry weight conversions should be clearly stated in the exposure assessment (global).

Section 4. Floodplain Exposure Assessment

Section 4. Suggest explicitly stating that descriptions of the terrestrial plant community such as, "robust, with good vigor and no indications of obvious phytotoxicological effects such as chlorosis, wilting, or mortality," are casual observations and not results from field investigations, and, therefore, have uncertainty associated with them.

Section 4.1. A rationale for the sample locations selected should be included, in addition to a discussion on the representativeness of the sample locations relative to the nature and extent of contamination.

Section 4.7. The use of duplicate samples as discrete samples is not recommended. This type of over-representation can be avoided by selecting either the average concentration between

the parent and the duplicate or the maximum concentration between the parent and duplicate.

Section 4.7. A reference that provides the guidance for Assumption #12: the concentrations of compounds in the shrew for use in the fox modeling equations were equal to the shrew's average daily dose (ADD), should be included.

Section 5. Aquatic Ecological Effects Assessment

Section 5.1.1 Stortelder et al. (1989) provides sediment benchmarks for the m-chloroaniline (a surrogate for p-chloroaniline) and 2,4-D. Note, however, that these benchmarks are conservative benchmarks. The reference is below:

> Stortelder, P.B., M.A. van der Gaag, and L.A. van der Kooij. 1989. Perspectives for water organisms. An ecotoxicological basis for quality objectives for water and sediment. Part 1. Results and calculations. DBW/RIZA Memorandum N. 89.016a. (English Version August, 1991). Institute for Inland Water Management and Waste Water Treatment. Lelystad, Netherlands.

Section 5.1.1. A reference that provides the guidance used in safety factor selection should be presented.

Table 5.1. A footnote should be added that states that the Jones et al. (1997) EqP Secondary Chronic Values (SCVs) were multiplied by the site-specific organic carbon fraction.

Table 5.1. Other sediment benchmarks identified in Section 5.1.1 (barium, beryllium, etc.) should be included in this table.

Section 6. Floodplain Ecological Effects Assessment

Section 6.3. Note that uncertainty associated with the use of chronic exposure toxicity values for the pond assessment could be avoided if amphibians were an ROI. The use of chronic values for amphibians would be appropriate because wet conditions in the spring would provide aquatic habitat during a critical lifestage for amphibians.

Section 7. Risk Characterization

Section 7.0 Please note that the use of hazard indices (HIs) is typically only applied to chemicals with similar toxic effects. An HI for all inorganics is inappropriate. A hazard quotient that sums cadmium and lead, rather than all inorganics, for example, would be appropriate because they have demonstrated reproductive impairment in birds and mammals. Furthermore, without specific information (such as receptors' nutritional status), interactions between chemicals, specifically inorganics, can be very difficult to evaluate, and complicate interoperation of the HI. Zinc, for instance, often acts as an antagonist but, under different conditions, interactions with cadmium can also be additive. Receptors with diets that are not nutritionally balanced or adequate may experience more harmful effects than if the diets were adequate.

Section 7.1.4. It is unclear if the conclusions from the Menzie-Cura evaluation also apply to the results obtained in the Area 2 evaluation.

Table 7-1. The derivations of H-UCL (95) and t-UCL (95) for the site mean concentrations are unclear, and inconsistently used in the calculation of the HQ_{mean}. HQ_{mean}s on page 1 are calculated using the H-UCL (95) while HQ_{mean}s on page 2 are calculated using the t-UCL (95). Exceedances of benchmarks are unlikely to change following this correction, except for zinc.

Section 8. Uncertainties

Section 8.4. The uncertainty associated with the allometric extrapolation of dietary ingestion rates (Nagy, 1987; Calder and Braun, 1983) should be removed because allometric equations were not used in this risk assessment.

Section 8.4. The uncertainties associated with using secondary sources for wildlife TRVs should be included.

Section 9. Results and Conclusions

Section 9. Discussions on the representativeness of the sample locations (spatial coverage) in the Sites and the temporal variation in the Sites, as they related to the risk conclusions, should be included. These considerations are part of the weight-of-evidence approach in the Risk Characterization. This discussion should also include the potential for reworking of the ground surface COC deposition pattern by rainfall and snowmelt.

Section 9.1. Please provide a summary of the interim groundwater remedy and a summary of the attenuation of the current level of contamination after elimination of groundwater migration by the interim remedy. Presumably, this is provided in another document, but should be listed here to the reader.

Section 9.2. Herbivores. It is unclear why potential risks were not predicted for Site Q (South) herbivores. More than 30 phytotoxicity benchmarks were exceeded for terrestrial plants at Site Q (South). LOAELs were also exceeded for the prairie vole, and, although the LOAEL-HQs were less than 10, neither were LOAEL-HQs greater than 10 at the Site O, which was predicted to have risk.

Section 9.2. Herbivores. Suggest that Figures 9-1 to 9-3 (Areas of Potential Ecological Concern) be removed because of the limited number of samples from which the Areas were determined, or that the uncertainties associated with determination of the Areas and the need for further delineation be explicitly stated.

Volume III. Appendix C.

Calculations. Note that allometric equations provided by Sample and Arenal (1999) supersede those used by Sample et al. (1996) and should be applied in this BERA. However, significant changes to TRVs are not expected.

Table III-C1. Suggest providing a description of the critical toxicological parameters (exposure duration, chemical form, dose, species, etc.) used in derivation of the benchmarks in a separate table.